

EVALUATION FORM—LNG FACILITY

Name of Operator:		
H.Q. Address:	System/Unit Name and Address:	
Co. Official: Phone No.: Fax No.: Emergency Phone No.: Operator ID#:	Phone Fax No.: Emergency Phone Unit Record Activity Record	
Persons Interviewed	Titles	Phone No.
OPS Representative(s):		
Date(s):		
Company System Maps (copies for Region Files):		
Type of facility: Base Load Satellite Peak Shaving Mobile/Temporary		
<small>Note: Mobile and temporary LNG facilities may meet the requirements of Section 2-3.4 of NFPA 59A (1996 edition) in lieu of the requirements of Part 193 per 193.2019.</small>		
Year Facility Was Placed In Operation: Liquefaction Rate, MMCFD: Type Of Liquefaction Cycle: Number Of Vaporizers & Capacities: Storage Take Statistics - (Fabricator, Volumes, Materials, etc.):		
Comments:		

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B	A	Paragraph	Description	S	U	N/A	N/C
§193.2017			193.2011 REPORTING PROCEDURES				
T	T	191.5/191.3	Incident reporting.				
T	T		C Telephonically reporting incidents to NRC (800) 424-8802.				
T	T		C Event that involves a release of gas or liquefied gas from an LNG facility.				
T	T		C Event that involves an emergency shutdown.				
T	T		C Death or personal injury requiring hospitalization.				
T	T		C Property damage (includes cost of lost gas) of \$50,000 or more.				
T	T		C Significant event (operator's judgment).				
T	T	191.25(a)	Filing safety-related condition reports.				
T	T		C Within five (5) working days of determination?				
T	T		C Within ten (10) working days of discovery?				
§193.2017			193.2503 NORMAL OPERATING PROCEDURES				
T	T	.2503	Written operating procedures that cover the topics in (a) through (h) must be provided.				
T	T	.2503(a)	Monitoring operating components and buildings for leaks, fires, and malfunctions that could cause a hazardous condition (see §193.2507).				
T	T	.2503(b)	Startup and shutdown, including initial startup and performance testing.				
T	T	.2503(c)	Recognizing abnormal operating conditions.				
T	T	.2503(d)	Purging and inerting (see §193.2517).				
T	T	.2503(e)	Maintaining the operation of vaporizers within design limits.				
T	T	.2503(f)	Maintaining the operation of liquefaction units within design limits.				
T	T	.2503(g)	Cooldown of components (see §193.2505).				
T	T	.2503(h)	Complying with the fire protection plan.				
§193.2017			193.2509 EMERGENCY PROCEDURES				
T	T	.2509(a)	The operator must determine the types and locations of non-fire emergencies that could occur as a result of equipment malfunctions, structural collapse, personnel error, forces of nature, and activities adjacent to the plant.				
T	T	.2509(b)	Written emergency procedures that cover topics (b)(1) through (b)(4) must be provided.				
T	T	.2509(b)(1)	Responding to controllable emergencies.				
T	T	.2509(b)(2)	Recognizing and acting on uncontrollable emergencies.				
T	T	.2509(b)(3)	Coordinating evacuation plans with local authorities.				

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T	T	.2509(b)(4)	Cooperating with local officials when mutual assistance is required, and keeping them informed of (i) - (iv).				
T	T	.2509(b)(4)(i)	Types, quantities, and locations of fire control equipment.				
T	T	.2509(b)(4)(ii)	Potential hazards at the plant, including fires.				
T	T	.2509(b)(4)(iii)	Communication and emergency control capabilities at the plant.				
T	T	.2509(b)(4)(iv)	The status of each emergency.				
		§193.2017	193.2511 PERSONNEL SAFETY PROCEDURES				
T	T	.2511(a)	Appropriate protective clothing and equipment must be provided for personnel who are performing emergency response duties.				
T	T	.2511(b)	Personnel at fixed locations must either be protected from the heat of fires or have a means of escape.				
T	T	.2511(c)	First aid materials must be available at a clearly marked location.				
		§193.2017	193.2513 TRANSFER PROCEDURES				
T	T	.2513(a)	Written procedures for transferring LNG and other hazardous fluids must be provided.				
T	T	.2513(b)	The procedures must include provisions for personnel to perform the tasks in (b)(1) through (b)(7).				
T	T	.2513(b)(1)	Before transfer, verify that the transfer system is ready for use and that the system has been purged (if necessary).				
T	T	.2513(b)(2)	Before transfer, verify that the receiving vessel does not contain an incompatible substance, and that it has enough available capacity to receive the amount of fluid to be transferred.				
T	T	.2513(b)(3)	Before transfer, verify the maximum filling volume of the receiving vessel to ensure that expansion of the incoming fluid (due to warming) will not result in overfilling or overpressuring.				
T	T	.2513(b)(4)	When transferring LNG into a partially filled vessel, take whatever steps are necessary to prevent stratification.				
T	T	.2513(b)(5)	During transfer, keep an eye on transfer rates, liquid levels, and vapor returns in order to prevent overfilling or overpressuring.				
T	T	.2513(b)(6)	Manually terminate flow before overfilling or overpressuring occurs.				
T	T	.2513(b)(7)	After transfer, deactivate the cargo transfer system in a safe manner (depressuring, venting, disconnecting, etc.).				
T	T	.2513	Written procedures for cargo transfer must be located at the transfer area, and they must include provisions for personnel to perform the tasks in (c)(1) through (c)(7).				
T	T	.2513(c)(1)	Be in constant attendance during all cargo transfer operations.				
T	T	.2513(c)(2)	Whenever a truck is being driven in reverse in the transfer area, ensure that someone is positioned at the back of the truck to aid the driver.				

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T	T	.2513(c)(3)	Before transfer, verify (c)(3)(i) through (c)(3)(iv).				
T	T	.2513(c)(3)(i)	Tank cars and tank trucks comply with applicable regulations.				
T	T	.2513(c)(3)(ii)	All transfer hoses have been visually inspected for damage and defects.				
T	T	.2513(c)(3)(iii)	Tank truck is electrically grounded and the wheels are chocked.				
T	T	.2513(c)(3)(iv)	Tank truck engine is off, unless it is needed for the transfer.				
T	T	.2513(c)(4)	If the truck engine is off during transfer, it is not to be restarted until the transfer lines are disconnected and any released vapors have dissipated.				
T	T	.2513(c)(5)	Prevent loading of LNG into a tank car or tank truck that is not in exclusive LNG service, unless specific tests have been performed.				
T	T	.2513(c)(6)	Verify that all transfer lines have been disconnected and equipment cleared before allowing the tank car or tank truck to move from the transfer position.				
T	T	.2513(c)(7)	Verify that transfers into a pipeline system will not exceed the pressure or temperature limits of the pipeline.				
	T	NFPA 8-7.2.1	Prohibit vehicular traffic within 25 ft of cargo transfer facilities when loading/unloading an LNG truck.				
	T		Prohibit vehicular traffic within 50 ft of cargo transfer facilities when loading/unloading a refrigerant truck.				
§193.2017			193.2515 INVESTIGATION OF FAILURE PROCEDURES				
T	T	.2515	Each operator shall investigate the cause of each explosion, fire, or LNG spill or leak which results in:				
T	T	.2515(a)	The operator must investigate the cause of each explosion, fire, or LNG spill that results in (1) death or an injury that requires hospitalization, or (2) property damage in excess of \$10,000.				
T	T	.2515(b)	After an investigation, appropriate action must be taken to minimize a recurrence.				
T	T	.2515(c)	Operator must cooperate during post-accident investigations and should maintain the scene in its post-accident state (to the extent practical).				
§193.2017			193.2519 COMMUNICATION SYSTEM PROCEDURES				
T	T	.2519(a)	Primary communications system (verbal) for all employees and their assigned work stations.				
T	T	.2519(b)	Plants over 70,000 gallons storage capacity, must provide an emergency communication system separate from the primary and security communication systems in 193.2909.				
T	T	.2519(c)	Each communication system must have a backup power supply.				
§193.2017			193.2521 OPERATING RECORD PROCEDURES				
T	T	.2521	Each operator shall maintain a record of results of each inspection, test and investigation required by this subpart. For each LNG facility that is designed and constructed after March 31, 2000 the operator shall also maintain related inspection, testing, and investigation records that ANSI/NFPA 59A requires. Such records, whether required by this part or ANSI/NFPA 59A, must be kept for a period of not less than five years.				

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§193.2017			193.2605 MAINTENANCE PROCEDURES				
T	T	.2605(a)	The operator must establish a schedule for conducting the periodic inspections and tests required by Subpart G, and must perform those inspections and tests.				
T	T	.2605(b)	Written procedures for maintenance and corrosion control (if applicable) of each component must be provided. These procedures must include the information called for in (b)(1) and (b)(2).				
T	T	.2605(b)(1)	Details of the inspections and tests (§193.2605(a)) and their frequencies.				
T	T	.2605(b)(2)	Descriptions of other actions needed to minimize the occurrence of leaks or spills, and to minimize the possibility of flammable fluids being ignited.				
T	T	.2605(c)	The maintenance manual must include instructions on how to recognize conditions that could be safety-related conditions that would need to be reported (191.23).				
§193.2017			193.2609 SUPPORT SYSTEM PROCEDURES				
T	T	.2609	Foundations and support systems (e.g., pipe rack supports) must be inspected for changes that could impair their support.				
	T	NFPA 4-1.7.3	Each heating system beneath an LNG tank must be monitored at least weekly.				
	T	NFPA 4-1.7.5	A tank bottom temperature survey must be conducted on each LNG tank that employs a tank foundation heating system:				
	T		C 6 months after the tank is placed in service.				
	T		C annually after the first survey.				
	T		C after an operating basis earthquake (OBE)				
	T		C if there is any indication of an abnormally cool area.				
§193.2017			193.2611 FIRE PROTECTION PROCEDURES				
T	T	.2611(a)	The maintenance schedule for fire control equipment must minimize the amount of equipment that is out of service at any one time.				
§193.2017			193.2613 AUXILIARY POWER SOURCE PROCEDURES				
T	T	.2613	Each auxiliary power source must be tested monthly to check its operational capability and tested annually for capacity. The capacity test must take into account the power needed to start up and simultaneously operate equipment that would have to be served by that power source in an emergency.				
§193.2017			193.2615 ISOLATING AND PURGING PROCEDURES				
T	T	.2615(a)	Before personnel begin maintenance activities on components handling flammable fluids which are isolated for maintenance, the component must be purged in accordance with a procedure which meets the requirements of AGA "Purging Principles and Practice," unless the maintenance procedures under §193.2605 provide that the activity can be safely performed without purging.				

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T	T	.2615(b)	If the component or maintenance activity provides an ignition source, a technique in addition to isolation valves (such as removing spool pieces or valves and blank flanging the piping, or double block and bleed valving) must be used to ensure that the work area is free of flammable fluids.				
§193.2017			193.2617 REPAIR PROCEDURES				
T	T	.2617(b)	The maintenance procedures must include precautions to be taken when repairing a component while it is operating.				
§193.2017			193.2619 CONTROL SYSTEM PROCEDURES				
T	T	.2619(a)	Each control system must be properly adjusted to operate within design limits.				
T	T	.2619(b)	If a control system is out of service for 30 days or more, it must be inspected and tested for operational capability before returning it to service.				
T	T	.2619(c)	Control systems in service, but not normally in operation, such as relief valves and automatic shutdown devices, and control systems for internal shutoff valves for bottom penetration tanks must be inspected and tested once each calendar year, not exceeding 15 months, with the following exceptions: (1) Control systems used seasonally, such as for liquefaction or vaporization, must be inspected and tested before use each season. (2) Control systems that are intended for fire protection must be inspected and tested at regular intervals not to exceed 6 months.				
T	T	.2619(d)	Control systems that are normally in operation, such as required by a base load system, must be inspected and tested once each calendar year but with intervals not exceeding 15 months.				
T	T	.2619(e)	Relief valves must be inspected and tested for verification of the valve seat lifting pressure and reseating.				
§193.2017			193.2621 TESTING TRANSFER HOSE PROCEDURES				
T	T	.2621(a)	Hoses used for transferring LNG or flammable refrigerant must be tested to the maximum pump pressure or the relief valve setting (whichever is less) once each calendar year, with intervals not to exceed 15 months.				
T	T	.2621(b)	Hoses used for transferring LNG or flammable refrigerant must be inspected for damage or defect before each use.				
§193.2017			193.2623 INSPECTING LNG STORAGE TANKS				
T	T	.2623	Storage tanks and their foundations must be inspected or tested to verify that the structural integrity or safety has not been impaired by conditions (a) through (d).				
T	T	.2623(a)	Foundation and tank movement during normal operation and after each major meteorological or geophysical disturbance.				
T	T	.2623(b)	Inner tank leakage.				
T	T	.2623(c)	Effectiveness of insulation.				
T	T	.2623(d)	Frost heave.				

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§193.2017			193.2625 CORROSION PROTECTION PROCEDURES				
T	T	.2625(a)	Components that might have their integrity or reliability adversely affected by corrosion (internal, external, or atmospheric) must be identified.				
T	T	.2625(b)	Components identified in §193.2625(a) must either be (1) protected from corrosion, or (2) inspected and replaced on a regular basis.				
	T	NFPA 6-9.2	Special precautions to be taken with aluminum alloys and austenitic stainless steels.				
§193.2017			193.2627 ATMOSPHERIC CORROSION PROCEDURES				
T	T	.2627	Components subject to atmospheric corrosion must either be;				
T	T	.2627(a)	C made of a material that resists such corrosion, or				
T	T	.2627(b)	C be protected by a suitable coating or jacketing.				
§193.2017			193.2629 EXTERNAL CORROSION CONTROL PROCEDURES: BURIED OR SUBMERGED COMPONENTS				
T	T	.2629(a)	Buried or submerged components that are subject to external corrosion must be:				
T	T	.2629(a)(1)	C made of a material that resists such corrosion, or				
T	T	.2629(a)(2)(i)	C protected by an external protective coating that meets 192.461, or				
T	T	.2629(a)(2)(ii)	C protected by a cathodic protection system that meets 192.463 (within one year of construction or installation).				
	T	NFPA 6-9.1	Buried or submerged piping must be protected and maintained in accordance with NACE RP 0169.				
T	T	.2629(b)	Where cathodic protection is applied, electrically interconnected components must be protected as a unit.				
§193.2017			193.2631 INTERNAL CORROSION CONTROL PROCEDURES				
T	T	.2631	Components subject to internal corrosion must either be:				
T	T	.2631(a)	C made of a material that resists such corrosion, or				
T	T	.2631(b)	C protected by a suitable coating, inhibitor, or other means.				
	T	NFPA 4-1.7.3	If electric heating elements within conduits are used beneath LNG tanks, provisions must be made to protect against galvanic corrosion of the conduits and heaters.				
§193.2017			193.2633 INTERFERENCE CURRENT PROCEDURES				
T	T	.2633(a)	Components subject to electrical current interference must be protected by a continuing program to minimize the detrimental effects of such currents.				
T	T	.2633(b)	Each cathodic protection system must be designed and installed such that the detrimental effects it might have on adjacent metal components are minimized.				
T	T	.2633(c)	Each impressed current power source must be installed and maintained in a manner that prevents adverse interference with communication and control systems.				

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§193.2017			193.2635 MONITORING CORROSION CONTROL PROCEDURES				
T	T	.2635(a)	Each buried or submerged component must be tested at least once each calendar year, with intervals not to exceed 15 months.				
T	T	.2635(b)	Each cathodic protection rectifier or other impressed current power source must be inspected at least 6 times per year, with intervals not to exceed 2½ months.				
T	T	.2635(c)	Each reverse current switch and diode must be checked at least 6 times per year, with intervals not to exceed 2½ months.				
T	T		Each interference bond whose failure would jeopardize component protection must be checked at least 6 times per year, with intervals not to exceed 2½ months.				
T	T		All other interference bonds must be checked at least once each calendar year, with intervals not to exceed 15 months.				
T	T	.2635(d)	Each component that is protected from atmospheric corrosion must be inspected at intervals not exceeding 3 years.				
T	T	.2635(e)	If corrosion coupons or probes are used to monitor internal corrosion, they must be checked at least twice each calendar year, with intervals not to exceed 7½ months.				
§193.2017			193.2637 REMEDIAL MEASURE PROCEDURES				
T	T	.2637	Prompt remedial action must be taken whenever corrosion control deficiencies are found.				
§193.2017			193.2711 PERSONNEL HEALTH				
T	T	.2711	Must have a written plan for evaluating the health and physical condition of personnel assigned operations, maintenance, security, or fire protection duties.				
§193.2017			193.2713 TRAINING PROCEDURES: OPERATIONS AND MAINTENANCE				
T	T	.2713(a)(1)	New permanent maintenance, operating, and supervisory personnel must receive initial training in the following subjects. The training must be based on a written plan.				
T	T	.2713(a)(1)(i)	Characteristics and hazards of LNG and other flammable fluids handled at the plant.				
T	T		C Low boiling point and storage temperature (-260°F).				
T	T		C Flammable limits of natural gas (5% to 15% in air).				
T	T		C LNG and its vapor are odorless.				
T	T		C LNG boils rapidly when spilled onto concrete, soil, etc.				
T	T		C LNG boils even more rapidly when spilled onto water or sprayed with water.				
T	T	.2713(a)(1)(ii)	Potential hazards involved in operations and maintenance.				
T	T	.2713(a)(1)(iii)	How to carry out operations and maintenance procedures that relate to their assigned functions.				

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B	A	Paragraph	Description	S	U	N/A	N/C
T	T	.2713(a)(2)	All new personnel must receive initial training in the following subjects. The training must be based on a written plan.				
T	T	.2713(a)(2)(i)	How to carry out the emergency procedures that relate to their assigned functions (see §193.2509).				
T	T	.2713(a)(2)(ii)	How to administer first aid.				
T	T	.2713(a)(3)	All operating personnel and appropriate supervisory personnel must receive initial training in the following subjects. The training must be based on a written plan.				
T	T	.2713(a)(3)(i)	Detailed instructions on facility operations, including:				
T	T		C Controls.				
T	T		C Functions.				
T	T		C Operating procedures.				
T	T	.2713(a)(3)(ii)	LNG transfer procedures (see §193.2513).				
T	T	.2713(b)	At intervals not to exceed two years, all personnel must receive refresher training in the subjects in which they received initial training. Refresher training must be based on a written plan.				
§193.2017			193.2715 TRAINING; SECURITY				
T	T	.2715(a)	Personnel responsible for security at an LNG plant must receive initial training in the following subjects. The training must be based on a written plan.				
T	T	.2715(a)(1)	How to recognize breaches of security.				
T	T	.2715(a)(2)	How to carry out security procedures that relate to their assigned duties (see §193.2903).				
T	T	.2715(a)(3)	Whatever plant operations and emergency procedures they need to know to effectively perform their assigned duties.				
T	T	.2715(a)(4)	How to recognize conditions that call for security assistance.				
§193.2017			193.2717 TRAINING; FIRE PROTECTION PROCEDURES				
T	T	.2717(a)	All operations and maintenance personnel, and their immediate supervisors, must receive initial training in the following subjects. The training must be based on a written plan.				
T	T	.2717(a)(1)	Fire prevention procedures under §193.2805(b). <i>(With respect to areas determined under paragraph (a)(2) of this section, each operator shall include in the operating and maintenance procedures under paragraphs 193.2503 and 193.2505, as appropriate, steps necessary to minimize -</i> <i>(1) The leakage or release of flammable fluids; and</i> <i>(2) The possibility of flammable fluids being ignited by sources identified under paragraph (a)(1) of this section.)</i>				

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T	T	.2717(a)(2)	Potential causes and areas of fires identified in §193.2805(a). <i>(Each operator shall determine - (1) Those potential sources of ignition located inside and adjacent to the LNG plant which could cause fires that effect safety of the plant; and (2) Those areas, as described in section 500-5 of ANSI/NFPA 70, where the potential exists for the presents of flammable fluids in an LNG plant. Determinations made under this paragraph must be kept current.)</i>				
T	T	.2717(a)(3)	Potential hazards of the fires identified in §193.2817(a). <i>(See next page)</i>				
T	T	.2717(a)(4)	Their assigned fire control duties, established in §193.2509, and the proper use of fire control equipment provided under §193.2817. <i>(See next page)</i>				
T	T	.2717(b)	At intervals not to exceed two years, all operations and maintenance personnel, and their immediate supervisors, must receive refresher fire protection training. This training must include fire drills and must be based on a written plan.				
§193.2017			193.2807 SMOKING PROCEDURES				
T		.2807(a)(1)	Smoking is prohibited in areas in which there is a potential for the release of flammable fluid.				
	T	NFPA 9-2.1	Smoking is prohibited within protective enclosures.				
T		.2807(a)(2)	Smoking is allowed only in areas designated as smoking areas.				
	T	NFPA 9-2.1	Smoking is allowed only in areas designated as smoking areas.				
T		.2807(b)	Smoking areas must be marked with SMOKING PERMITTED signs.				
	T	NFPA 9-2.1	Smoking areas must be signposted.				
T		.2807(c)	Nonsmoking areas must be marked with NO SMOKING signs.				
	T	NFPA 8-7.1.4	Loading and unloading areas must be marked with NO SMOKING signs.				
§193.2017			193.2807 OPEN FIRES PROCEDURES				
T		.2809(a)	Open fires are prohibited, except for flare stacks and at times and places designated by the operator.				
T		.2809(b)(1)	Trained fire fighting personnel must be present at each designated open fire.				
T		.2809(b)(2)	Adequate fire control equipment must be located at the site of each designated open fire.				
T		.2809(c)	Fire fighting personnel and equipment must remain at the fire site until the fire is extinguished and there is no possibility of reignition.				
§193.2017			193.2811 HOT WORK PROCEDURES				
T		.2811	Welding, flame cutting, etc., are permitted only when authorized by the operator in writing (hot work permit) and when constantly supervised in accordance with NFPA 51B.				
	T	NFPA 9-2.1	Welding, flame cutting, etc., are permitted only at times and places authorized, and must be done in accordance with NFPA 51B.				

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§193.2017			193.2813 STORAGE OF FLAMMABLE FLUID PROCEDURES				
T		.2813	Flammable fluids may not be stored in areas where ignition sources are present, unless they are stored in accordance with Chapter 4 of ANSI/NFPA 30.				
§193.2017			193.2815 MOTORIZED EQUIPMENT PROCEDURES				
T		.2815	Any motorized equipment or vehicle that is a potential ignition source is prohibited within an impounding space, or within 50 ft of plant equipment that contains a flammable fluid, except when written permission is given by the operator and the equipment is constantly attended.				
	T	NFPA 9-2.2	Any motorized equipment or vehicle that is a potential ignition source is prohibited within an impounding space, or within 50 ft of plant equipment that contains LNG, flammable liquids, or flammable refrigerants, except when authorized and constantly attended.				
§193.2017			193.2817 FIRE EQUIPMENT PROCEDURES				
T		.2817(a)	The operator must determine the types and sizes of fires that have a reasonable chance of occurring, and the foreseeable consequences of those “credible” fires.				
	T	NFPA 9-1.2	The operator must conduct a fire protection evaluation. (This would be expected to include the types and sizes of fires that might occur, and their consequences.)				
T		.2817(b)	Fire control equipment needed to protect or cool components that could fail due to heat from “credible” fires must be provided and maintained in accordance with ANSI/NFPA 59A.				
	T	NFPA 9-1.2(c)	The operator must provide methods for protecting equipment and structures from the effects of fire exposure.				
T		.2817(b)(1)	Fire control equipment must include suitable type(s) of portable fire extinguishers.				
	T	NFPA 9-6.1	Portable or wheeled fire extinguishers must be provided.				
T		.2817(b)(2)	A fire water supply and delivery system must be provided if the total inventory of LNG exceeds 70,000 gal.				
	T	NFPA 9-5.1	A fire water supply and delivery system must be provided, unless the fire protection evaluation (9-1.2) indicates that fire water is unnecessary or impractical.				
T		.2817(c)	The size, quantity, and location of fire control equipment and supplies required by §193.2817(b) must be determined.				
	T	NFPA 9-1.2(a)	The size, quantity, and location of fire control equipment must be determined.				
T		.2817(d)	Each facility worker who might be endangered by exposure to fire or smoke while performing fire control duties must be supplied with appropriate protective clothing and equipment (including SCBA, if necessary).				
	T	NFPA 9-9.2/9-9.3	Each facility worker who might be endangered by exposure to fire or smoke while performing fire control duties must be supplied with appropriate protective clothing and equipment (including SCBA, if necessary).				

EVALUATION FORM—LNG FACILITY

B - Before March 31, 2000; A - After March 31, 2000; S - Satisfactory; U - Unsatisfactory; N/A - Not Applicable; N/C - Not Checked

B	A	Paragraph	Description	S	U	N/A	N/C
T		.2817(e)	Fire control equipment and supplies, personal protective clothing and equipment, and controls for fixed fire control equipment must be clearly marked and readily accessible.				
	T	NFPA 9-3.5	Operating instructions identifying the location and operation of emergency controls must be posted conspicuously in the facility area.				
T		.2817(f)	Operating instructions must be attached to portable fire control equipment and placed at the controls of fixed fire control equipment.				
§193.2017			193.2819 GAS DETECTION PROCEDURES				
T		.2819(a)	Areas identified as potential locations for releases of flammable fluids must be monitored by fixed gas detectors, if the release could pose a hazard to persons or property.				
	T	NFPA 9-4.1	Areas that have a potential for flammable gas concentration or spills of LNG or flammable refrigerant must be monitored for the presence of gas or spilled liquid.				
T		.2819(b)	Each fixed gas detector must have an audible and a visible alarm at an attended location, and an audible alarm in the area near the gas detector.				
	T	NFPA 9-4.2	Flammable gas detectors must activate visual and audible alarms at the plant site, and at an attended location if the facility is not constantly attended.				
T		.2819(c)	The alarm point of flammable gas detectors must be no higher than 25% of the LFL of the gas being monitored.				
	T	NFPA 9-4.2	The alarm point of flammable gas detectors must be no higher than 25% of the LFL of the gas being monitored.				
T		.2819(d)	Gas detection systems must be installed so that they can be readily tested as required by ANSI/NFPA 59A.				
	T	NFPA 9-4.4	Gas detector and low temperature detector tests and maintenance records.				
T		.2819(e)	At least two portable flammable gas detectors must be available for use at all times.				
	T	NFPA 9-9.4	At least one portable gas detector shall be readily available.				
T		.2819(f)	Each building that houses a flammable fluid or is connected to a source of flammable fluid by piping or uninterrupted conduit must be monitored by fixed gas detectors that have a visible or audible alarm outside the building.				
	T	NFPA 9-4.1	Each enclosed building that has a potential for flammable gas concentration or spills of LNG or flammable refrigerant must be monitored for the presence of gas.				
§193.2017			193.2821 FIRE DETECTION PROCEDURES				
T		.2821(a)	Areas identified as potential locations for releases of flammable fluids, and areas used for storing flammable or combustible materials, must be monitored by fire detectors, if a fire in the area could pose a hazard to persons or property.				
	T	NFPA 9-4.1	Areas that have a potential for flammable gas concentration or spills of LNG or flammable refrigerant must be monitored for fires.				

EVALUATION FORM—LNG FACILITY

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B	A	Paragraph	Description	S	U	N/A	N/C
T		.2821(b)	Each fire detection system must have an audible and a visible alarm at an attended location, and an audible alarm in the area in which the fire is detected.				
	T	NFPA 9-4.3	Fire detectors must sound an alarm at the plant site, and at an attended location if the facility is not constantly attended.				
§193.2017			193.2903 SECURITY PROCEDURES				
T	T	.2903	Written security procedures must be available at the plant. The procedures must discuss topics (a) through (g).				
T	T	.2903(a)	Description and schedule of security inspections and patrols.				
T	T	.2903(b)	A list of security personnel positions or responsibilities.				
T	T	.2903(c)	Brief description of the security duties of security personnel.				
T	T	.2903(d)	Description of actions to be taken when there is an actual or attempted breach of security.				
T	T	.2903(e)	Method(s) for determining which persons are allowed access to the LNG plant.				
T	T	.2903(f)	Positive identification of all persons who enter the plant, using a method at least as effective as picture badges.				
T	T	.2903(g)	Liaison with local law enforcement officials.				
§193.2017			193.2907 PROTECTIVE ENCLOSURE CONSTRUCTION PROCEDURES				
T	T	.2907(a)	Each protective enclosure must have a combination of strength and configuration that is sufficient to obstruct unauthorized access to the enclosed facilities.				
T	T	.2907(b)	Openings in or under the enclosure must be secured by grates, doors, or covers that provide at least the same level of protection as the enclosure.				
§193.2017			193.2909 SECURITY COMMUNICATIONS PROCEDURES				
T	T	.2909(a)	There must be a means for prompt communications between personnel with supervisory security duties and law enforcement personnel.				
T	T	.2909(b)	There must be a means for communications between all on-duty personnel who have security duties and all control rooms/control stations.				
§193.2017			193.2911 SECURITY LIGHTING PROCEDURES				
T	T	.2911	If security warning systems are not provided for security monitoring, security lighting must be provided for protective enclosures and the areas they enclose (minimum of 2.2 lux from sunset to sunrise).				
§193.2017			193.2913 SECURITY MONITORING PROCEDURES				
T	T	.2913	<p>If the plant has 250,000 bbls or more storage capacity, each protective enclosure, and the area around the facilities listed in 193.2905(a), must be monitored for the presence of unauthorized persons, using one of the following methods. (If less than 250,000 bbls of storage capacity, only the protective enclosures need to be monitored.)</p> <p style="margin-left: 40px;">C security warning systems that continuously transmit information to an attended location.</p> <p style="margin-left: 40px;">C visual observation in accordance with a schedule (193.2903(a)).</p>				

EVALUATION FORM—LNG FACILITY

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B	A	Paragraph	Description	S	U	N/A	N/C
§193.2017			193.2915 ALTERNATIVE POWER SOURCE PROCEDURES				
T	T	.2915	An alternative source of power that meets §193.2445 must be provided for security lighting and for security monitoring and warning systems.				
§193.2017			193.2917 WARNING SIGN PROCEDURES				
T	T	.2917(a)	Warning signs, readable at night from a distance of 100 ft, must be placed conspicuously along each protective enclosure.				
T	T	.2917(b)	The signs must be marked with the words “NO TRESPASSING,” or words of comparable meaning, on a background of sharply contrasting color.				

EVALUATION FORM—LNG FACILITY

RECORDS							
B	A	Paragraph	Description	S	U	N/A	N/C
191.5 and 191.25 REPORT RECORDS (5-year minimum retention)							
T	T	191.5	Incident reports (telephonic notification) (corrective action?).				
T	T	191.25	Safety-related condition reports (corrective action?).				
		§193.2521	193.2521 OPERATING RECORDS (5-year minimum retention)				
T	T	.2503(c)	Investigation of Abnormal Operating Conditions				
T	T	.2503(e)	Vaporization Records				
T	T	.2503(f)	Liquefaction Records				
T	T	.2505	Cooldown Records				
T	T	.2507	Records associated with Monitoring Operations				
T	T	.2509(b)(3)&(4)	Public Liaison with Fire, Police, emergency responders, and local officials.				
T	T	.2513	Records associated with transferring LNG or other hazardous fluids.				
T	T	.2515	Investigation of Failures.				

		§193.2639	193.2639(a) MAINTENANCE RECORDS (5-year minimum retention)				
T	T	.2603(c) and (d)	Components taken out of service.				
T	T	.2609	Support systems (foundations and pipe rack supports).				
	T	NFPA 4-1.7.3	Heating systems beneath LNG tanks (weekly).				
T	T	.2613	Auxiliary power sources.				
T	T		C Operational tests (starting, fuel supply, etc.) (monthly).				
T	T		C Capacity tests (under load) (annually).				
T	T	.2621	Transfer hose inspection records (once per year; not to exceed 15 months).				
T	T	.2623	LNG storage tank inspection records.				
T	T		C Foundation and tank movement.				
T	T		C Inner tank leakage.				
T	T		C Effectiveness of insulation.				
T	T		C Frost heave.				
		§193.2639	193.2639(a) MAINTENANCE RECORDS - CONTROL SYSTEMS - (5-year minimum retention)				
T	T	.2619(b)	Control systems out of service for 30 days or more must be inspected and tested for operational capability before returning to service.				

EVALUATION FORM—LNG FACILITY

B	A	Paragraph	Description	S	U	N/A	N/C
T	T	.2619(c)	Automatic shutdown devices (once per year; not to exceed 15 months).				
T	T	.2619(c)(1)	Seasonal control systems (liquefaction/vaporization) (prior to use).				
T	T	.2619(c)(2)	Fire protection control systems (not to exceed 6 months).				
T	T	.2619(d)	Control systems normally in use (once per year; not to exceed 15 months).				
T	T	.2619(e)	Relief valves (once per year; not to exceed 15 months).				
§193.2639		193.2639(b) MAINTENANCE RECORDS - CORROSION CONTROL - (retain for life of facility)					
T	T	.2635(a)	Cathodic protection records (once per year; not to exceed 15 months).				
T	T	.2635(b)	Rectifier inspection records (6 per year; not to exceed 2 ½ months).				
T	T	.2635(c)	Critical interference bonds (6 per year; not to exceed 2 ½ months); noncritical interference bonds (15 months).				
T	T	.2635(d)	Atmospheric corrosion records (once every 3 years).				
T	T	.2635(e)	Internal corrosion monitoring records (twice per year; not to exceed 7 ½ months).				
T	T	.2639(b)	Records or maps showing CP components, bonded structures.				
§193.2719(a)		193.2719 TRAINING RECORDS (retain for duration of employment, plus one year)					
T	T	.2713(a)	Initial training - operations and maintenance.				
T	T		C Characteristics and hazards of LNG.				
T	T		C Emergency procedures related to assigned duties.				
T	T		C First-aid.				
T	T		C Facility operations, controls, functions.				
T	T		C LNG transfer operations.				
T	T	.2713(b)	Follow-up operations and maintenance training (every 2 years).				
T	T	.2715(a)	Initial training - security.				
T	T		C Recognize breaches of security.				
T	T		C Carry out security procedures related to assigned function.				
T	T		C Recognize conditions where security assistance is needed.				
T	T	.2715(b)	Follow-up security training (every 2 years).				
T	T	.2717(a)	Initial training - fire protection (including fire drills).				
T	T		C Review fire prevention plan.				
T	T		C Review potential causes and potential fire prone areas.				
T	T		C Review types, sizes, and predictable consequences of a fire.				
T	T		C Review assigned fire control duties and use of equipment.				
T	T	.2717(b)	Follow-up fire protection training (every 2 years).				

EVALUATION FORM—LNG FACILITY

B	A	Paragraph	Description	S	U	N/A	N/C
§193.2719(a)			193.2711 PERSONNEL HEALTH				
T	T	.2711	Personnel health records (testing per requirement of operator's written health plan).				
§193.2719(a)			193.2819 GAS DETECTION				
T		.2819(d)	Gas detector test and maintenance records.				
	T	NFPA 9-4.4	Gas detector and low temperature detector tests and maintenance records.				
§193.2719(a)			193.2821 FIRE DETECTION				
T		.2821	Fire detection inspection and maintenance records.				
	T	NFPA 9-4.4	Fire detection inspection and maintenance records.				

EVALUATION FORM—LNG FACILITY

FIELD REVIEW							
B	A	Paragraph	Description	S	U	N/A	N/C
T	T	.2511(c)	First aid materials.				
T	T	.2519(a)	Verbal communication system for all operating personnel.				
T	T	.2519(b)	Verbal emergency communication system (if >70,000 gal).				
T	T	.2519(c)	Backup power supply for communication systems.				
T	T	.2607(a)	Excessive external icing.				
T	T	.2607(b)	LNG plant grounds maintenance and upkeep (grass, trash, ... etc.).				
T	T	.2609	Support systems (foundations, pipe rack supports, etc.).				
T	T	.2611(b)	Access routes for fire control equipment kept clear of snow, etc.				
T	T	.2613	Auxiliary power supply.				
T	T	.2619(a)	Control systems calibration.				
T	T	.2621(b)	Transfer hose(s).				
T	T	.2623	Storage tanks.				
T	T	.2627	Atmospheric corrosion.				
T	T	.2635	Cathodic protection (CP levels).				
T		.2807	Smoking and no smoking signs.				
	T	NFPA 9-2.1/8-7.1.4	Smoking and no smoking signs.				
T		.2811	Hot work (look at permits).				
	T	NFPA 9-2.1	Hot work (look at permits).				
T		.2817	Fire fighting equipment.				
T			C Portable fire extinguishers.				
	T	NFPA 9-6.1	C Portable fire extinguishers.				
T		.2817	C Protective clothing, equipment, clearly marked.				
	T	NFPA 9-9.2/9-9.3	C Protective clothing, equipment, clearly marked.				
T		.2817	C Operating instructions attached to fire control equipment and placed at the location of controls of fixed equipment.				
	T	NFPA 9-3.5	C Operating instructions attached to fire control equipment and placed at the location of controls of fixed equipment.				
T		.2819	Gas detection system.				
	T	NFPA 9-4.1	Gas detection system.				
T		.2821	Fire detection system.				

EVALUATION FORM—LNG FACILITY

B	A	Paragraph	Description	S	U	N/A	N/C
	T	NFPA 9-4.1	Fire detection system.				
T	T	.2905	Protective enclosures.				
T	T	.2911	Lighting.				
T	T	.2915	Alternative power sources.				
T	T	.2917	Warning signs along fence or boundary, visible at 200 ft at night.				